

NRSP-6 Germplasm Usage in Western States, 2003

A. Mosley

Local Developments

Use of NRSP-6 germplasm is expected to steadily increase in the Pacific Northwest, in particular, where state and federal breeders are vigorously and cooperatively attempting to develop improved resistance to late blight, viruses and two species of nematodes. To assist breeders, Oregon State University provides local field screening of late blight foliar and tuber infection levels for (six) cooperators from across the U.S. Similar screening for viruses (PVY and PLRV) and, to a lesser extent, nematodes is conducted by the Hermiston station.

Personnel changes caused by retirements are significantly affecting many western university programs. For example, Ron Voss, leader of the UC Davis breeding program, will retire this summer and apparently will not be replaced. This represents a significant loss to the entire region since Ron cooperates closely with breeding programs throughout the west including Texas and Colorado.

OSU potato breeding efforts hopefully will gain more depth due to upcoming personnel changes. Al Mosley, project leader, will step down in December 2004. Plans call for a replacement position with greater emphasis on plant genetics and breeding (and less on extension). If such plans materialize, the Oregon program should grow significantly in terms of original contributions to potato genetics and breeding while continuing varietal develop efforts much as they are. Ken Rykboost of the Klamath Falls Station will fully retire at the end of 2005 but is currently training a potential successor.

Mark Pavek assumed the former Robert Thornton position at Washington State University and is gathering speed at a satisfactory rate.

The Tri-state released several varieties in 2003 including: Alturas (<http://oregonstate.edu/potatoes/A82360-7Alturas.pdf>), Willamette (<http://oregonstate.edu/potatoes/Willamette.pdf>), Modoc (<http://oregonstate.edu/potatoes/Modoc.pdf>), Summit Russet (<http://oregonstate.edu/potatoes/SummitRusset.pdf>), Western Russet (<http://oregonstate.edu/potatoes/Western%20Russet.pdf>) and GemStar Russet (<http://oregonstate.edu/potatoes/A9014-2RelDoc.pdf>).

Specifics of 2003 Germplasm Usage

The Western Region used 1343 units of NRSP-6 germplasm in 26 orders in 2003 (Table 1). This represents an increase of approximately 100% over 2002. Materials ranged from true potato seeds for breeding and other uses to herbarium samples for museum use. Universities accounted for more than 48% of the units, ARS/USDA workers used 34.5%

(primarily at Prosser, Washington) and private individuals and companies including potato processors ordered 17%.

Germplasm orders were used as summarized in Table 1. Dr. Charles Brown will provide additional information on western ARS germplasm usage elsewhere in these minutes.

Selected users further described their 2003 activities in the following brief reports:

Brian Charlton, Oregon State University

I've been screening NRSP-6 material for frost tolerance. The Klamath Basin presents unique growing conditions as frost can occur any night of the growing season. This presents an opportunity to observe how these clones perform under field conditions rather than in a cold chamber. Promising material has been retained the past two seasons and included as parental stock in several OSU crosses by OSU's breeding group.

William Campbell, Alaska Plant Materials Center

I whole-heartedly support NRSP-6. The work they perform is vital to the US potato industry. This component of the USDA/ARS is the basis for all potato varieties yet to come. In a world with food shortages, the hopes of the future rest in germplasm and it's wise use.

The Alaska Plant Materials Center obtained over 60 cultivars from NRSP-6 in 2003. These materials were increased and made available for variety trials by the University of Alaska Experiment Station in 2004. Several remote villages as well as community gardens in Juneau and Shaktoluk and McGrath will grow these potatoes as variety trials in 2004.

Rich Hannan, Washington State University

I used six NRSP-6 PI lines in a demonstration garden project with the Nez Perce Indian Tribe in Lapwai, Idaho. We planted a garden that included mostly crop plants from the Americas (Western Hemisphere). The goals of the project were: 1) teaching small plot garden technology to locals; 2) to produce and distribute fresh produce as part of the USDA food distribution center near our garden plots; and 3) demonstrate germplasm conservation approaches to help preserve native food species.

Stephen Facciola, Kampong Publications

I am the author of 'Cornucopia: A Source Book of Edible Plants'. I use the germplasm to assist in cultivar descriptions, determine which cultivars to include, and occasionally to identify food products obtained in ethnic and gourmet markets.

Phil Jenkins, University of Arizona Herbarium

The Arizona herbarium has received 15 *Solanum feldleri* A. Gray and 17 *Solanum jamesii* Torrey voucher specimens collected in mostly southern Arizona by John Bamberg and others during several collecting trips. The total is then 32 specimens accessioned into our collection.

We have loaned 49 *S. feldleri*, 2 *S. iopetalum* (Bitter) Hawkes, and 29 *S. jamesii* (total of 80 specimens) to David Spooner at Sturgeon Bay, WI.

Rick Machado, Machado Farms

We are doing heat and drought tolerance breeding and research on our farm in Southern California, and without the help of Max Martin and Jesse Schartner we would be crawling forward rather than stepping forward. Their expertise, combined with the accessions they have to offer has been a tremendous help to small farmers like myself. The discovery of *S. chacoense* to use as breeding germplasm, which has opened the door for us, would never have happened if not for their help. Without the potato station, we would have never taken the chances we are taking now.

It's one thing to be a farmer; it's another thing to be a breeder. Having help like Max and Jesse have given me has enabled us to make a contribution to the agricultural community as well as the world as a whole. Without the germplasm we are testing, our project would simply stop, lurch forward a bit for a few years and then die out. It's one thing to lose farmland but another thing entirely to lose farmers. Without access to valuable breeding material, we would not be able to progress on our farm. One day we'd simply lose heart, pack it up and move to the city.

Breeding ensures there will be a future for my small farm as well as the few thousand that are left. And having reliable access to rare germplasm keeps us breeding. Every day that I go out and look at my potatoes growing, and I check the temperature and notice it's over 100F, I say "Thanks, Max and Jesse – without your help I wouldn't have created a potato that could handle this heat.

I am very grateful for the potato station.

Table 1. 2003 NRSP-6 WESTERN REGIONAL ORDERS

Atwood, N. Duane	BOTANY	Brigham Young University
stanley_welsh@museum.byu.edu		Stanley L. Welsh Herbarium
Provo	Utah	84602-0200
PHONE: ****		FAX: ****
Units: 4	Herbarium specimens of Utah collections for the BRY herbarium.	
Ayers, Tina J.	BOTANY	Northern Arizona University
tina.ayers@nau.edu		Deaver Herbarium
Flagstaff	Arizona	86011-5640
PHONE: ****		FAX: ****
Units: 34	Herbarium specimens of Arizona collections for the ASC herbarium.	
Baker, Dr. Barbara	GENET	University of California
bbaker@socrates.berkeley.edu		Plant Gene Expression Center,
USDA		
Albany	California	94710
PHONE: (510) 559-5912		FAX: ****
Units: 8	Foreign varieties for late blight work.	
Belknap, Dr. William R.	GENET	USDA, ARS
wrb@pw.usda.gov		Western Regional Research Center
Albany	California	94710
PHONE: (510) 559-6072		FAX: 510-559-5775
Units: 3	3 tubes of Lenape for tissue culture stock:	
Brown, Dr. Chuck R.	GENET	USDA, ARS
cbrown@tricity.wsu.edu		WSU Irrigated Ag. Research Center
Prosser	Washington	99350
PHONE: (509) 786-9252		FAX: 509-786-9277
Units: 165	Accessions for shock & awe and Ozette comparison.	
Units: 40	Additional accessions for Ozette comparison.	
Units: 3	In vitro tubes for comparison work.	
Units: 214	Additional accessions for Ozette comparison.	
Units: 3	In vitro tubes of Ozette for comparison work:	

Campbell, Dr. William L.	BREED	State of Alaska, Dept of Natural Res.
bill_campbell@dnr.state.ak.us		Plant Materials Center
Palmer	Alaska	99645-9706
PHONE: (907) 745-4469		FAX: 907-746-1568

Units: 39 Varieties for stocking.
Units: 3 Varieties for stocking.
Units: 21 Varieties for stocking.

Charlton, Brian A.	PHYSI	Oregon State University
brian.a.charlton@oregonstate.edu		Klamath Experiment Station
Klamath Falls	Oregon	97603
PHONE: (541) 883-4590		FAX: 541-883-4596

Units: 62 Tubers for cold breeding work.

Dudek, Nancy Priya	GENET	University of California - Berkeley
ndudek@uclink.berkeley.edu		Plant Gene Expression Center
Albany	California	94710
PHONE: (510) 559-5931		FAX: 510-559-5929

Units: 36 Gene Expression work:
Units: 3 Plaidsted breeding stock seeds for Gene Expression work:

Facciola, Stephen	HOME	Kampong Publications
kzyl-uruk@worldnet.att.net		1870 Sunrise Dr.
Vista	California	92084
PHONE: (760) 726-0990		FAX: ****

Units: 6 S. cph accessions for growing for tuber size and taste.

Hannan, Dr. Richard	EXHIB	Washington State University
hannan@wsunix.wsu.edu		Regional Plant Introduction Station
Pullman	Washington	99164-6402
PHONE: (509) 335-3683		FAX: 509-335-6654

Units: 5 Cultivated varieties for show tubers:

Jenkins, Dr. Philip	BOTANY	University of Arizona
pjenkins@u.arizona.edu		113 Shantz
Tucson	Arizona	85721
PHONE: ****		FAX: ****

Units: 34 Herbarium specimens of Arizona collections for the ARIZ Herbarium.

Lorenzen, Dr. James	BREED	University of Idaho
jiml@uidaho.edu		Department of PSES
Moscow	Idaho	83844-2339
PHONE: (208) 885-7013		FAX: ****

Units: 297 3 tubes of each of the following RFLP Mapping Clones:

Lowrey, Timothy K.	BOTANY	University of New Mexico -
Herbarium		
tlowrey@unm.edu		Department of Biology
Albuquerque	New Mexico	87131
PHONE: ****		FAX: ****

Units: 69 Herbarium specimens of New Mexico collections for the UNM herbarium.

Machado, Rick	BREED	Machado Farms
farmrik@aol.com		26501 Wickard Road
Sun City	California	92586
PHONE: (909) 672-3094		FAX: ****

Units: 16 Varietal development with heat and drought tollerant selections:

Mogensen, Susana	PHYSI	Brigham Young University
sumogensen@hotmail.com		275 WIDB Building
Provo	Utah	84602
PHONE: ****		FAX: ****

Units: 4 Developing testing procedures for the presence of weed seeds in topsoil.

Nakahata, Ms. Mae	PHYSI	
agres@maui.net		75 Kawehi Place
Kula	Hawaii	96790
PHONE: ****		FAX: ****

Units: 75 Hawiian tuberization trial.

Novy, Dr. Richard	PATHO	USDA, ARS
rnovy@uidaho.edu		University of Idaho R&E Center
Aberdeen	Idaho	83210-0530
PHONE: (208) 397-4181		FAX: (208) 397-4311

Units: 33 Breeding for foliar and tuber blight resistance.
Units: 2 Breeding for foliar and tuber blight resistance.

Ranker, Thomas A.	BOTANY	University of Colorado
thomas.ranker@colorado.edu		Herbarium
Boulder	Colorado	80309-0350
PHONE: (303) 492-5074		FAX: 303-492-4195

Units: 6 Herbarium specimens of Colorado collections for the COLO herbarium.

Rommens, Dr. Caius	GENET	J.R. Simplot Company
crommens@simplot.com		5369 W. Irving Street
Boise	Idaho	83706
PHONE: (208) 327-3287		FAX: ****

Units: 41 Screening for accessions high in antioxidants.

Rumold, Ms. Claudia	ANTHRO	University of California
cur0@umail.ucsb.edu		Anthropology Department
Santa Barbara	California	93106
PHONE: (805) 687-7967		FAX: ****

Units: 20 Tuber families for testing starch types.

Smith, Heather	BREED	Farmer Cooperative Genome
Project		
heathers@rio.com		30848 Maple Dr.
Junction City	Oregon	97448
PHONE: (541) 998-3069		FAX: 541-998-1192

Units: 6 For evaluation by the Farmer Coop Genome Project.
Units: 16 For evaluation by the Farmer Coop Genome Project.

Swords, Dr. Kathy	BREED	J.R. Simplot Company
kathy.swords@simplot.com		Simplot Plant Sciences
Boise	Idaho	83706
PHONE: (208) 327-3311		FAX: 208-327-3212

Units: 3 Cultivation and breeding of small potatoes.

van Hest, Peter	BREED	Bejo Seeds, Inc
pvanhest@bejoseeds.com		1972 Silver Spur Place
Oceano	California	93445
PHONE: (805) 473-2199		FAX: 805-473-0897

Units: 63 Tuber materials for late blight evaluation.

Vanhille, Mr. Lee	HORT	
lvanhille@dsdmail.net		595 S. 700 E.
Centerville	Utah	84014
PHONE: ****		FAX: ****

Units: 3 Frost hardy species for outside growing in high altitude.

Wang, Xiaoxue	PATHO	University of California, Berkeley
xxwang@uclink.berkeley.edu		Plant Gene Expression Center
Albany	California	94710
PHONE: (510) 559-5931		FAX: 510-559-5929

Units: 2 Late blight work.

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Yilma, Solomon	PATHO	Oregon State University
solomon.yilma@orst.edu		Crop and Soil Sciences Department
Corvallis	Oregon	97331
PHONE: ****		FAX: ****

Units: 2 Late blight screening.

**** = INFORMATION NOT PROVIDED BY COOPERATOR